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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,250	11/17/2003	Hai Deng	42P17681	6528

7590 01/24/2006  
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EXAMINER

NGUYEN, DAO H

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 10/716,250	Applicant(s) DENG ET AL.	
	Examiner Dao H. Nguyen	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1103 &amp; 0305</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This Office Action is in response to the communications dated 11/17/2003 through 12/27/2005.

Claims 1-24 are active in this application.

Claim(s) 25-29 has/have been cancelled.

### **Acknowledges**

2. Receipt is acknowledged of the following items from the Applicant.

Information Disclosure Statement (IDS) filed on 11/17/2003 and 03/14/2005. The references cited on the PTOL 1449 form have been considered.

Applicant is requested to cite any relevant prior art if being aware on form PTO-1449 in accordance with the guidelines set for in M.P.E.P. 609.

Applicant made a provisional election without traverse to prosecute the invention of Group II, claims 1-24, in the Response to Restriction Requirement filed 12/27/2005.

Claims 25-29 have been cancelled.

Applicant has the right to file a divisional application covering the subject matter of the non-elected claims.

### **Drawings**

3. The drawings are objected to for the following reasons.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Reference characters "520" in figures 6-7. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application.

### **Specification**

4. The specification has been checked to the extent necessary to determine the presence of possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### **Claim Rejections - 35 USC § 112**

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim(s) 1-24 is/are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 19 are rejected because they are not clearly defined and distinctly pointed out the subject matter which is claimed as the Applicant's invention. Claims 1 and 19 each claims a method, but none of them further defines that a method is for or of doing what? It is vague and/or not clear as to what the method(s) is/are going to do?

Claims 1-18 and 20-24 depend from rejected based claims 1, 19 and include all of the limitations of the based claim; thereby rendering these dependent claims indefinite.

#### **Claim Rejections - 35 USC § 102**

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim(s) 1-7, 9-21, and 23-24 is/are rejected under 35 U. S. C. § 102 (e) as being anticipated by U.S. Patent Application Publication No. 2005/0236714 by Leu et al.

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Regarding claim 1, Leu discloses a method comprising: depositing a zeolite-solvent solution 102 on an underlying layer 100 (See paragraph [0027]);

removing at least some of the solvent from the zeolite-solvent solution to form a zeolite film; and

depositing a carbon doped oxide (CDO) 122 (paragraph [0023] in the zeolite film to form a zeolite-CDO composite film. See also paragraphs [0009]-[0016].

Regarding claim 2, Leu discloses the method wherein the solvent is water. See paragraphs [0013-0016].

Regarding claim 3, Leu discloses the method wherein the solvent is an organic oligomer. See paragraph [0015].

Regarding claim 4, Leu discloses the method wherein the organic oligomer is selected from a group consisting of polyethylene glycol, poly styrene, poly (Methacrylates), Poly (acrylate), or poly ethylene oxide. See paragraphs [0012-0016].

Regarding claim 5, Leu discloses the method wherein removing at least some of the solvent from the zeolite-solvent solution comprises: drying the zeolite-solvent solution. See paragraph [0016].

Regarding claim 6, Leu discloses the method wherein removing at least some of the solvent from the zeolite-solvent solution comprises: vacuuming the zeolite-solvent solution. See paragraph [0016].

Regarding claim 7, Leu discloses the method wherein depositing the zeolite-solvent solution on the underlying layer comprises: spin-coating the zeolite-solvent solution on the underlying layer. See paragraph [0016].

Regarding claim 9, Leu discloses the method wherein depositing the CDO in the zeolite film comprises chemical vapor deposition of the CDO in the zeolite film. See paragraph [0023].

Regarding claim 10, Leu discloses the method wherein the CDO 122 is a silicon oxide. See paragraph [0023].

Regarding claim 11, Leu discloses the method wherein the underlying layer 100 is a wafer. See paragraph [0016].

Regarding claim 12, Leu discloses the method wherein the underlying layer is an interlayer dielectric layer. See figs. 2.

Regarding claim 13, Leu discloses the method wherein the interlayer dielectric layer comprises a zeolite-carbon doped oxide composite film. See figs. 2, and paragraphs [0024-0028].

Regarding claim 14, Leu discloses the method further comprising calcinating the zeolite-CDO composite film to form a solid phase zeolite-CDO composite film. See paragraphs [0008-0027].

Regarding claims 15-18, Leu discloses the method comprising all claimed limitations. See paragraphs [0008-0027].

Regarding claim 19, Leu discloses a method comprising  
forming a zeolite-carbon doped oxide (CDO) composite interlayer dielectric 102/122 on an underlying layer 100;

etching a via opening 118 and a trench 116 in the zeolite-CDO composite interlayer dielectric; and

forming a conductive material 104/107 in the via opening and the trench. See figs. 1-2, and paragraphs [0008-0027].

Regarding claim 20, Leu discloses the method wherein forming the zeolite-CDO composite interlayer dielectric on the underlying layer comprises:

depositing a zeolite-solvent solution 102 on the underlying layer 100;



drying the zeolite-solvent solution to remove at least some of the solvent to form a zeolite film (paragraph [0027]); and

depositing a CDO 122 in the zeolite film by chemical vapor deposition to form a zeolite-CDO composite film (paragraph [0023];

heating the zeolite-CDO composite film; and cooling the zeolite-CDO composite film (paragraphs [0012-0014]).

Regarding claim 21, Leu discloses the method wherein depositing the zeolite-solvent solution on the underlying layer comprises spin-coating the zeolite-solvent solution on the underlying layer. See paragraph [0027].

Regarding claims 23 and 24, Leu discloses the method comprising all claimed limitations.

### **Claim Rejections - 35 U.S.C. § 103**

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claim(s) 8 and 22 is/are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent Application Publication No. 2005/0236714 by Leu et al. in view of the following remarks.

Regarding claims 8 and 22, Leu discloses the method comprising all claimed limitations, except for teaching that depositing the zeolite-solvent solution on the underlying layer comprises dip-coating the zeolite-solvent solution on the underlying layer.

However, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Leu so that the zeolite-solvent solution being deposited on the underlying layer by a dip-coating method, because such method is well known in the art, and that those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention of Leu, and that it would involve only routine skills in the art.

### **Conclusion**

11. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-

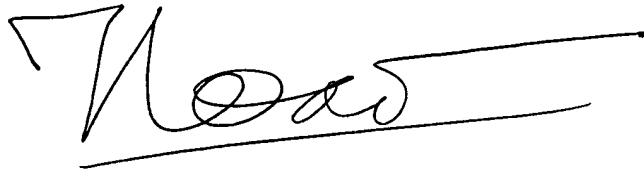
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1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax numbers for all communication(s) is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.



Dao H. Nguyen  
Art Unit 2818  
January 22, 2006



David Nelms  
Supervisory Patent Examiner  
Technology Center 2800